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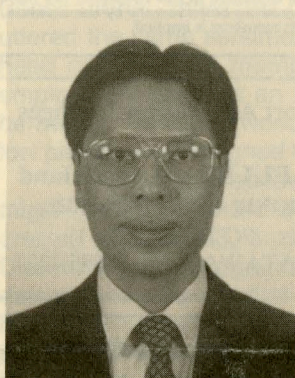
REGIONAL ACTIVITIES



(USPS 450-540)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

FRACTALS, CHAOS AND WAVELETS— NEW TRENDS IN SIGNAL PROCESSING



Dr. Jack-Kang Chan

The Signal Processing Chapter will host a talk on Fractals, Chaos, and Wavelets — New Trends in Signal Processing, to be given by Dr. Jack-Kang Chan on November 10, 1993, 6:30 PM at the IEEE office at AIL (see Calendar for directions).

Many new techniques in signal processing, such as chaos, fractals and wavelets, have been developed in recent years. They are now applied in various areas like image compression, non-linear systems, 1/f-noise characterization, radar, sonar and biomedical engineering. However, in most current literature, some of these tools are not well explained due to space limitation. This talk attempts to introduce the basic concepts of these modern tools and some of their applications.

In particular, some less familiar definitions such as self-similarity, fractal dimensions, bifurcation, invariant set/attractor/fixed point, Julia sets and Mandelbrot set, Iterated Function Systems (IFS), multiresolution analysis, frames, compactly supported wavelets and splines will be explained. We will then show that fractals are not just beautiful pictures and the IFS are useful for image compressions. Although chaotic systems are not predictable, they can be synchronized and applied to private communications. Wavelet transforms have been introduced as an alternative tool to Fourier analysis. They are closely related to Gabor transforms, subband coding, quantum mechanics and multiresolution analysis. Some of these relationships will be explored if time permits. Finally, we will show the available books, videotapes and software for further studies and applications.

Jack-Kang Chan received his B.Sc. (Math.) from the University of London; B. Sc. (Electronics) from the Chinese University of Hong Kong; M.S. (E.E. - System Science), Ph.D. (E.E.), M.S. (Industrial & Applied Math.), and Ph.D. (Math.), all from the Polytechnic University. Since 1980, he has been with Norden Systems in Anti-Submarine Warfare Engineering, and he is currently the Vice Chairman of the L.I. Signal Processing Chapter. For more information, please call J-K Chan at (516) 845-2560.

JAMES CRAIB

First editor of *Pulse* dies in Arizona at age 80

Born in upstate New York, Jim became a ham radio operator at an early age. During World War II, he worked with Harold Wheeler at Hazeltine pioneering the use of regenerative receivers in IFF transponders. After the war, he developed automatic photographic processing equipment for Technifinish in Rochester before moving to AIL where he developed complex radar systems and other electronic equipment.

In his early years at AIL he was very active in the IRE and sent postcard announcements of subsection meetings to the members. In September 1952, just as we were about to attain full section status, Jim thought Long Island should have a newsletter and started the *Pulse*. With his staff of John Crawford, Dave Dettinger, Robert Hamlett and Patricia Loth, he edited the *Pulse* for the first two years.

No project seemed so formidable that Jim would not tackle it. Together with Dick Knadle he purchased the RCA communications tower in Riverhead and they spent the next six months of weekends disassembling it to use for their ham

radio antennas. A most enthusiastic "rock hound", he collected tons of gem stones and minerals for cutting and polishing in his basement. Many of these he later moved to his summer retirement home in Pennsylvania.

After 27 years at AIL, Jim took early retirement to pursue some of his many other interests. His wife having died about the time of his retirement, Jim spent his winters traveling the country to gem and mineral shows and meetings in his Recreational Vehicle, always ending up in Arizona for the giant gem and mineral show there. During these travels he became an active member of the "Loners on Wheels", a society dedicated to helping single people with RV's find friends with similar interests, through RV gatherings, etc.

The allure of the Southwest and their giant gem and mineral shows motivated him to build his final home, "Top of the World" 4000 feet up the mountains above Miami, AZ, where he died of prostate cancer on July 29. He is survived by his two daughters, Karen Charles in Maine and Jeanette Smith in Indiana, a sister, Catherine Wakeman in N.J., 4 grandsons and 2 great grandsons. Because of his paternal interest, we suspect that some of his last words were "Long Live the *Pulse*!"

CHAIRMAN'S MESSAGE

by Ed Palacio,

A large group of us, your elected officers and appointed staff, attended a two-day workshop in Lake George this past summer to learn a little bit more about the workings of the IEEE and about the jobs we have just been elected to fulfill. It was an interesting and entertaining weekend and we were able to meet and network with officers of the other sections that comprise Region 1.

The only reason I mention this is that involvement in the IEEE can take many forms. If your preference is toward very specific technical activities, we have 12 society chapters that can use your help in organizing talks, lectures, tutorials or symposiums and would love to see you in the audience. If your slant is managerial or administrative and you want to get experience and exposure, the Executive Committee may be the place for you. We hold yearly elections and actively seek new candidates to move through the ranks of section leadership. If professional activities is your preference, we are one of the premier sections in this area and our Employment Activity Committee, consultant's network, and PACE group can use your help. Student activities? Educational programs? Want to learn about putting out a newsletter? Help with publicity? Want to get involved in setting up the Awards Banquet and get an education in running such a large affair before your daughter walks in and tells you she's getting married? We can put you to work in any of these endeavors.

Let me assure you, an active member gets considerably more for his or her dues than a passive one who gets only the publications (and maybe the insurance). So, if I have enticed you in any way, give me a call and we'll get you involved.

REGION 1 AWARDS

Rod Lowman, Historian

At the Region 1 meeting in Lake George on August 28, 1993, the Awards Committee selected two members of the Long Island Section to be award recipients. They are:

Richard T. Knadle, for development of a very high resolution Spatial Time Domain Reflectometry System converting the world's largest anechoic chamber to a highly accurate Antenna Measuring System.

Irwin Weitman, for spearheading the creation of IEEE Consultants Networks all over the U.S. and for encouraging self-employment as a viable option for engineers.

Our congratulations to Dick and Irwin for their accomplishments and well deserved recognition. Their awards will be formally presented at the Section Awards ceremony in the spring.

EDITORIAL

When looking toward the future, it's not that easy to predict where things will go, but we all usually have some idea of what general road we'd like to travel. Such is the case with me as Editor of the Pulse of Long Island.

As space permits, there are things I would like to add to the newsletter. As Editor, I've had the opportunity to peruse other sections' newsletters. One interesting aspect I note from some of these other newsletters is their depth of focus. Some sections provide expanded articles extending up to a full page regarding "hot topics" in a variety of engineering fields. These articles provide a broad look at current research projects, present and future applications, and/or the feasibility of implementation. Articles of this nature could provide increased interest and awareness among our members and might even prompt greater attendance at our seminars, talks and tutorials. Obviously, increased participation in these events is better for all concerned.

Granted, some of the newsletters I'm referring to are produced on a much grander scale. And, while space doesn't currently permit the use of such lengthy articles in our newsletter, there's no reason to limit my expectations.

Speaking of space permitting, some of you may wonder why announcements submitted to the editor only appear in the Calendar. This is the result of space limitations. Such a wealth of information is received that unfortunately it is nearly impossible to fit all of it into the allotted number of pages. Our primary responsibility is to provide information concerning the news and events of the Long Island Section. Generally speaking, announcements concerning the LI Section receive mention in the Calendar and an expanded notice appears somewhere within the general text of the newsletter. Regrettably, because there is so much taking place with the Long Island Section, announcements regarding events of other sections don't always find their way to the general text of the newsletter. In this event, those items will usually receive a customary mention in the Calendar. This is not to say that other sections should not submit their announcements. By all means send them to me, and as space permits I will place them in the general text.

The general idea here is to keep the furnace blazing by giving an in-depth look at today's hot topics, and to not only be the Pulse of Long Island, but the heartbeat of it as well!

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LONG ISLAND IEEE CALENDAR

(No membership requirements, no registration, no fees at meetings unless otherwise noted. IEEE Office is in United Way building at AIL, Commack Road, Deer Park, LIE Exit 52)

NOVEMBER 3 — Networking - LI Consultants Network - 7:00 PM - IEEE Office - info, Warren Newman at (516) 864-7722 or Irwin Weitman at (516) 266-2428.

NOVEMBER 9 — *Keeping Competitive in the 21st Century via the National Information Superhighway* - Communications Society - 6:00 PM - at the Dairy Barn Building of New York Institute of Technology, see article in this issue.

NOVEMBER 10 — *Fractals, Chaos and Wavelets - New Trends in Signal Processing* - LI Chapter of Signal Processing - 6:30 PM - IEEE Office, see article in this issue. For Info Call Dr. Jack-Kang Chan at (516) 845-2560.

NOVEMBER 10 — *World Trade Center Recovery* - Power Engineering Society and Industry Applications Society NY & LI Chapter - 5:30 PM - Con Edison Building, 4 Irving Place, NYC, 19th Floor Auditorium. For information call Joseph D. Connors at (212) 943-2846, or Mark C. Reed at (212) 943-2828.

NOVEMBER 11 — *Parallel Processing at the IBM T.J. Watson Research Center* - Computer Society - 7:00 PM - New York Institute of Technology, Harry Schur Hall, Route 25A, Old Westbury, NY, see article in this issue. For information call Dr. T.L. Teng, or Dr. Leon Wang at (516) 686-7623.

NOVEMBER 15 — *Dynamic Location Area Management & Adaptive Averaging Methodology for Handoffs in Cellular Systems* - Vehicular Technology Society - North Jersey Chapter - 2:00 PM - KDI/Triangle Electronic Systems, 60 S. Jefferson Road, Whippany, NJ (Route 287, Route 10 exit). For Information call Melvin Lewis (914) 968-2500, ext. 2304, or Arthur Greenberg (201) 633-6129.

NOVEMBER 17 — Employment Assistance Committee - 7:00 PM - IEEE Office. For information call Harvey at (516) 595-5608, or Tish at (516) 595-5160 or 595-5170.

NOVEMBER 17 — *Application of Metal Enclosed Switch Gear* - PES/IAS (NY & LI Chapter) - 5:30 PM - New York Power Authority (Paramount Plaza) 1633 Broadway at 50th Street, 21st Floor. For information, call Mr. Hazem A. Huss at (201) 822-1016, or Hans Candia at (914) 681-6660.

NOVEMBER 18 — *Cockpit Instrumentation* - Past and Present - Aerospace and Electronic Systems Chapter - 6:00 PM - New York Institute of Technology, Harry Schur Hall, room 222, Route 25A, Old Westbury, NY, see article in this issue. For Information call Tom Campbell at (516) 757-3008.

NOVEMBER 20, 27; DECEMBER 4, 11 — *Introduction to Spread Spectrum Communications and Radar* - 9:00 AM to 12:00 PM, IEEE Office. For information call John Gunther at (516) 595-5860.

NOVEMBER 23 — *Co-Registration and Visualization of 3-D Multimodal Medical Images* - The Engineering in Medicine and Biology Society (NY/NoJ/LI Chapter) 6:30 PM - New York Academy of Medicine, Fifth Avenue at 103rd Street. For information contact Joel Levitt at (718) 891-6460, Sol Manber at (516) 585-8200, or Andrew Baxt at (516) 678-6563.

NOVEMBER 29 — EXCOM meeting - 6:00 PM - IEEE Office.

NOVEMBER 30 — *Intelligent Highways and Vehicular Systems* - New York Section (Education Committee) - 9:00 AM to 5:00 PM - fee and registration required - Consolidated Edison Co. 19th Floor Auditorium, 4 Irving Place, New York, NY (14th Street near 4th Avenue). For administrative information call Nichole McFarlane at (201) 216-6020. For technical information call David Aviv at (212) 425-8160.

DECEMBER 1 — *The Hand X-Ray Camera on PBX-M* - Nuclear & Plasma Sciences Society, Princeton/New Jersey Coast Chapter - 8:00 PM - Princeton University, Engineering Quadrangle, Convocation Room C-217. The Engineering Quadrangle is on Olden Street. Coming from Route 1, turn right on Prospect Avenue and left on Olden Street. Park along the Street or across from the main entrance. For information call Charley Bowman at (609) 490-2132 or Dirk Plummer at (908) 219-9553.

MARCH 19, 1994 — Call for Papers - Long Island Conference Artificial Intelligence and Computer Graphics - The 1994 Long Island Conference on Artificial Intelligence and Computer Graphics is now soliciting papers on significant new research results in the area of AI, CG and the theme of this year's Conference - Multimedia Technology. Contributions should emphasize the novel aspects of the work being reported, if possible, and should discuss their implications for future AI, CG, and Multimedia Developments. Authors should send three (3) copies of extended abstract (approximately 3 to 5 double-spaced pages) to the following address for possible presentation at this conference: The LI Conference Committee, Department of Computer Science, New York Institute of Technology, Old Westbury, NY 11568, Attn: Dr. L. Teng. For information call (516) 686-7623, or fax (516) 686-7864.

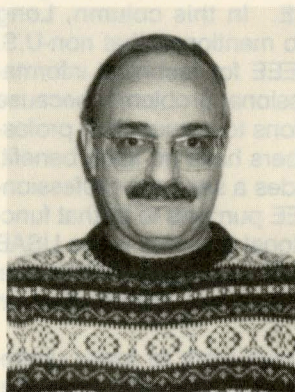
COMPUTER SOCIETY WILL HOST DISCUSSION ON PARALLEL PROCESSING RESEARCH

The Computer Society will host a talk on parallel processing research being conducted at the IBM T.J. Watson Research Center, to be given by Dr. C.J. Tan, on Thursday, November 11, 1993 at 7:00 PM at the Harry Schure Lecture Hall, New York Institute of Technology.

In this talk he will discuss several research activities at the IBM Watson Research Center. In particular, he will discuss the architecture of the Scalable Parallel Processor (SP1) developed at the IBM Yorktown research center. He will also provide an overview of two other research activities: 1) Very Long Instruction Word (VLIW) architecture, which addresses problems of instruction level fine grain parallelism, and 2) the Deep Blue chess machine, which involves basic research in massively parallel special purpose systems, with the goal of achieving best human chess champion level playing strength in 1994.

Dr. C.J. Tan received a BSEE degree from Seattle University in 1963 and a Dr. of Engineering Science degree from Columbia University in 1969. He joined IBM T.J. Watson Research Center in 1969 as a Research Staff Member. He has been involved in technical and managerial activities in the areas of Very Large Scale Integration (VLSI), optimizing compilers, and parallel processing. In 1991, Dr. Tan was named Senior Manager, Concurrent Systems. In this capacity, his responsibilities include research programs in the area of architecture development and machine design for highly parallel scalable systems. His department was responsible for the architecture definition and design of the communication subsystem of the recently announced IBM parallel processor SP1.

STAYING COMPETITIVE IN THE 21ST CENTURY VIA THE NATIONAL INFORMATION SUPERHIGHWAY



Vincent Vecchio

A talk on the Information Superhighway sponsored by the Communications Society will be held on Tuesday, November 9th, 6:00 PM, at the Diary Barn building of New York Institute of Technology at Old Westbury.

The speaker, Vincent Vecchio, is a member of the Applied Research Group at Bellcore. His professional activities encompass research market and strategic business analysis for high speed, high performance networking. He has been active in many professional activities including IEEE, ANSI and CCITT. Previous to Bellcore, Vincent worked for

Diamond Shamrock, ITT World Communications and MCI International.

This presentation will describe and discuss the National Information Infrastructure, its relationship to the Internet, the National Research and Education Network (NREN), and existing network infrastructure. It will also address such issues as how it will benefit us personally, obstacles to its implementation and opportunities which will be created for industry.

The National Information Infrastructure, also referred to as the Information Highway, is a major initiative supported by the Clinton-Gore administration. The object of this initiative is to use leading edge networking technology to rejuvenate education, health care, government, and industry, to make America more competitive in the fast emerging 21st Century global economy.

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LETTER TO THE EDITOR

To the Editor:

I'm writing in response to the Chairman's Message in the October 1993 issue of PULSE. In this column, Long Island Section Chairman Ed Palacio mentioned that non-U.S. Sections of IEEE depend on the IEEE for technical information, but not for resolution of professional problems, because they have their own local organizations to pursue their professional well being. IEEE U.S. members have no such benefit. The mere existence of IEEE precludes a separate professional society for U.S. EEs, because IEEE purports to fill that function. However the head of professional activities is the USAB Chairman, who is also the VP of IEEE worldwide professional activities. IEEE President Martha Sloan has commented on this potential conflict of interest.

How can the USAB Chairman work to lower unemployment of U.S. EEs or to restore U.S. industrial competitiveness, perhaps at the expense of our overseas competitors? Recent articles in THE INSTITUTE have emphasized the transnational character of IEEE. The USAB Chairman has uttered the same sentiment. This should ring an alarm in the head of U.S. IEEE members. Chairman Palacio notes that employment was not an issue to non-U.S. engineers whom he met at the IEEE (worldwide) Sections Congress, where a low priority was assigned to employment concerns.

A recent proposed IEEE Constitutional amendment might have alleviated the problem. If passed, it would have created a VP of U.S. professional activities. But the Board of Directors argued against its passage, so it went down in defeat. One measure that is not a solution is to create a separate IEEE Society of professional activities. This is because Society dues are optional, and frugal EEs might not join and pay Society dues over and above their IEEE dues. I don't see an immediate solution to this dilemma. However I wish for Long Island IEEE members to be aware of it and lend their efforts to any IEEE activities (like Long Island PACE) that can improve matters. Such efforts could affect their careers favorably.

Robert Bruce
Long Island Section/USAB Liaison

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PACE

by Irwin Weitman, Chair

If you read this before Nov. 1, 1993 and have not voted for the IEEE President elect and region director, it's not too late. If you have been reading the "Institute" and other IEEE news sources, you are aware that many changes are being suggested and considered for the future of IEEE. It is important that persons who represent your interests be in those elected offices. My suggestion is that you read their position statements very carefully. Then VOTE!!!!

I wonder how many readers of the *Pulse* know what "IEEE-USA" or "PACE" really is! Did you know that your annual dues include a mandatory assessment for "United States Activities", which then passes on a portion to PACE?

Did you know that IEEE-USA and its councils and committees are the **ONLY** entity in IEEE that looks out for your professional and career interests?

Did you know that United States membership is now down to 75% of the total IEEE membership? Did you know that this percentage has been falling each year and is still continuing to fall?

Did you know that some of the officers of IEEE at the top level are seriously considering making the IEEE-USA assessment voluntary?

If the IEEE-USA assessment were voluntary, I believe that IEEE-USA would cease to function, then all we would be left with are the Societies with their Transactions, Spectrum, some journals, and no one to lobby for portable pensions, more and better insurance policies, member education, and support for entities such as Consultants Networks and Employment Assistance Committees.

If you have access to E-Mail through Compuserve or Internet, you can get an IEEE E-Mail "alias" which will give you simple and immediate access for communication with any IEEE staff member, volunteer or member who has an "alias". I find E-Mail very useful. There is a great deal of useful information such as IEEE legislative reports, petitions to congressmen, etc. available on IEEE E-Mail. The IEEE E-Mail is not a BBS, but it is an excellent vehicle for communication. If you would like an "alias" and instructions how to use it, access INTERNET and address a message to:

info.directory @ ieee.org

There is no need to put any message in the text area. If you want a list of information files available from IEEE, just address a message to:

info.info @ ieee.org

(I did not put a period at the end of the sentence to avoid confusing the address.) If you get an alias and would like to try it out, you can reach me at

i.weitman

The alias is not case sensitive.

I am not crazy enough to expect all the IEEE members on Long Island will contact me. In fact, based on previous experience I will be underwhelmed.

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EMPLOYMENT ASSISTANCE COMMITTEE (EAC)

by Harvey Alstadter and Tish

A few months ago we reported that there seemed to be a thaw in the job situation. We are happy to report that the trend continues. While we are not being overwhelmed with job offers, they are coming in at an increasing rate. We are using our database to match our members skills to these offers and notifying the members of the opportunities.

You too can hear about job opportunities. All you have to do is let us know what kind of work you want to do. The EAC provides this matching service to IEEE members and non members alike, at no charge.

To get yourself into our database, all you have to do is send in the skills inventory questionnaire you will find in the next issue of the *Pulse*. Even if you have already submitted a questionnaire, please review the new one as it has been revised, with some new categories and instructions included. When you send it in, please also enclose your resume.

To answer the most common question asked at our meetings: We do not send out your resume or your skills information to any potential employer. When a match is made, we notify you, and it is up to you to follow up. The employer will not know you exist unless you take the initiative.

We had a fantastic turn out for our September meeting. The speaker was Bob Cook of the Sabre Agency. He provided solid insight into the interview process from the other side of the table. Mr. Cook described how the interviewer reads your resume and your responses to his questions.

This talk spurred a lively discussion period which dealt in detail with how to present information in the resume. Although no totally satisfactory approach was found, each participant gained something he or she could use.

If you come to our next meeting you will get a one month jump on getting the new questionnaire, you will meet others in similar circumstances and you may get exposed to someone or something that may help you get a job.

Meetings are held at 7:00 PM on the third Wednesday of each month at the IEEE offices at 819 Commack Road in Deer Park. Call Harvey at (516) 595-5608 or Tish at 595-5160, 595-5170 for directions or other information about the EAC.

A LONG LOOK BACK

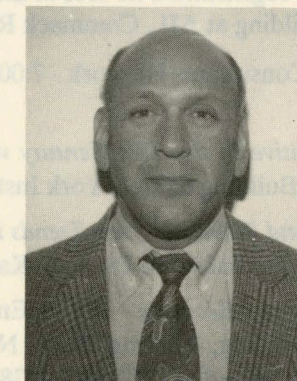
by Rod Lowman, Historian

As a tribute to Jim Craib, the first editor of the *Pulse*, who died recently (see obituary), we are looking all the way back to that first issue of our publication for this month's historical reflection. For the first few years as a subsection of N.Y., Jim had notified members of meetings with postcard announcements. Just before we attained full section status, Jim thought Long Island should have a newsletter and so the *Pulse* was born.

That first issue invited our members to hear Claude Shannon of Bell Telephone Laboratories describe a machine that learns by trial and error to find its way out of a maze. "Theseus", the maze solving machine, demonstrated how to find its way out of a maze. It would remember the path it took, and come out easily the next time. Over 300 members came out to watch in awe as the "mechanical mouse" worked its way through the maze, remembering its successes so that the next time it was a breeze. Later versions became transistorized, and even today, student "Mighty Mouse" contestants compete for better and more efficient models.

Claude Shannon, having revolutionized switching and computations with his use of Boolean algebra, used "Theseus" as a most graphic demonstration of what could be done with only ones and zeroes. Now 41 years later, look where it has taken us!

AES TO HOST AIRCRAFT COCKPIT INSTRUMENTATION PROGRAM



Ira Rubel

interesting and timely talk is open and free of charge to the public.

Mr. Rubel will discuss the various types of analog display instrumentation used on aircraft such as the original DC9, 727, 747, C-130, and C/KC-135, and how technology advances shifted the display medium to digital presentation as on the DC-10 and MD-80. Then he will address present day multi-function integrated cockpit systems using fixed format LCDs, CRTs and flat panel active matrix LCDs used on the 757, 767, 747-400, 777 and MD-11. The talk will include an overhead slide presentation and will feature a demonstration of actual hardware representative of the various display technologies.

Mr. Rubel has been with Gull Electronics Systems since 1969. He has been involved with the design and development of numerous military, commercial and general aviation fuel quantity gauging systems, cockpit instruments and other related cockpit displays and systems. He holds United States and foreign patents in fuel gauging technology.

Mr. Rubel received a B.S.E.E. degree from Brooklyn Polytechnic, a M.E.E. degree from New York University, and an MS degree in Engineering Management from C.W. Post. He is a licensed Professional Engineer in the State of New York, a Federal Aviation Administration Designated Engineering Representative, a member of New York Institute of Technology's Technical Advisory Council.

To obtain further information on this program or to join the speaker for a post-talk dinner, call Tom Campbell at 516-757-3008.

STUDENT ACTIVITIES OF THE PES & IAS TO HOST CAREER ORIENTATION EVENTS

The Power Engineering Society and Industry Applications Society will host a talk on Preparing for the Future, and Leadership in the Nineties, by industry representatives from Brooklyn Union Gas, Tuesday January 11, 1994, 6:00 PM, at Consolidated Edison, 4 Irving Place, room 1425, NYC. Tri Huynh, a 1991 graduate of Stony Brook will discuss the benefits of a cooperative internship experience while in college. He will also give suggestions on preparing for interviews.

Chris Dawson, a 1990 CCNY graduate, will discuss the type of leadership skills that will assist students in obtaining future employment. Resumes will be collected for the 1994 Brooklyn Union Gas summer program, but are not needed for entrance into the presentation. Refreshments will be served.

Additional information will be given about summer employment. Any questions, please contact S. Weaver at the IEEE Student Branch CCNY, (212) 650-7154, Fax (212) 650-8249, E-mail: s.weaver@ieee.org